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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/985,737	11/06/2001	Yoshinori Terui	215891US2	4230
7590	12/22/2003			EXAMINER KEANEY, ELIZABETH MARIE
OBLON SPIVAK MCCLELLAND MAIER & NEUSTADT FOURTH FLOOR 1755 JEFFERSON DAVIS HIGHWAY ARLINGTON, VA 22202			ART UNIT 2882	PAPER NUMBER
DATE MAILED: 12/22/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/985,737	TERUI ET AL.
	Examiner	Art Unit
	Elizabeth Gemmell	2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### ***Office Action Summary***

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extension of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If the reply is filed after the period set in the notice, the mail date of the communication will be considered the day the reply is filed.
- Failure to reply within the set or extended period may result in abandonment of the application. See 37 CFR 1.133(a).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(d).

## Status

1)  Responsive to communication(s) filed on 08 September 2003.  
2a)  This action is **FINAL**.                            2b)  This action is non-final.  
3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4)  Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) 12-14 is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 1-11 is/are rejected.

7)  Claim(s) \_\_\_\_\_ is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 06 November 2001 is/are: a)  accepted or b)  objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.  
13)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a)  The translation of the foreign language provisional application has been received.  
14)  Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s).  
4)  Interview Summary (PTO-413) Paper No(s).  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other. See *Continuation Sheet*.

Continuation of Attachment(s) 6. Other: IDS filed 11/06/01; 05/01/02; 09/08/03.

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election of Group I, claims 1-11 in paper filed 8 September 2003 is acknowledged.

Applicant's election with traverse of Group I in paper filed 8 September 2003 is acknowledged. The traversal is on the ground(s) that Group I and Group II require an overlapping search. This is not found persuasive because while there may be an overlapping search, the search required for Group I is not required for Group II and vice versa and thereby causing an undue burden on the examiner. For example, the apparatus drawn to Group I is searched within class 313, subclasses 336, 155, 158, 346R, 350, 337 and 335 but no search is required within class 315, where the method is classified.

The requirement is still deemed proper and is therefore made FINAL.

Claims 12-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the paper filed 8 September 2003.

***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on 16 May 2000. It is noted, however, that applicant has not filed a certified copy of the 2000-143087 application as required by 35 U.S.C. 119(b).

***Specification***

The abstract of the disclosure is objected to because line 4 "mode" should be -- made--. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities:

- Subheadings are missing throughout the disclosure.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veneklasen et al. (US Patent 6,392,333; hereinafter Veneklasen) in view of Takigawa et al. (US Patent 4,430,570; hereinafter Takigawa).

Re claim 1: Veneklasen discloses, in figure 2 and throughout the disclosure, an electron gun comprising:

- an electron emission cathode (14);
  - wherein a tip of the electron emission cathode is located between the control electrode and the extractor (column 4, line 5);
- a control electrode (16); and
- an extractor (24).

However, Veneklasen is silent as to the material in which the electron emission cathode is made from.

Takigawa discloses an electron emission cathode made from a rare earth hexaboride (column 1, line 64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a hexaboride cathode within the system disclosed by Veneklasen because by using a hexaboride cathode the electron gun has an extended service life while providing sufficient luminescence.

Re claim 2: Takigawa discloses the electron emission surface of the electron emission cathode is spherical (column 2, line 22).

Re claim 3: Takigawa discloses the apex angle of the tip portion of the electron emission cathode is 50-100 degrees (column 5, line 8).

Re claim 4: Takigawa discloses the rare earth hexaboride being lanthanum hexaboride (column 1, line 64).

Re claim 11: Takigawa discloses an angular intensity of 0.2-70 mA/sr is provided in the application of a driving voltage of 1kV (column 5, line 33).

Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veneklasen and Takigawa in view of Ishii et al. (US Patent 4,482,838; hereinafter Ishii).

Re claim 5: Veneklasen and Takigawa show all the limitations as shown above. However, Veneklasen and Takigawa fail to teach or fairly suggest the electron emission cathode being flat.

Ishii discloses an electron emission cathode being flat (figure 5a).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the electron emission cathode of Ishii for that of Veneklasen and Takigawa because by having a flat electron emission cathode the electron beam intensity is more constant over time (column 1, line 38-39).

Re claim 6: Veneklasen shows all the limitations as shown above. Takigawa discloses apex angle of the tip portion of the electron emission cathode being 50-100 degrees (column 5, line 8).

It would have been obvious to one of ordinary skill in the art to substitute an electron emission cathode having a flat tip and an apex angle of between 50-100 degrees because an angle between 50-100 degrees enhances the luminous intensity.

Re claims 7 and 8: Veneklasen and Takigawa shows all the limitations above. However, Veneklasen and Takigawa fail to teach or fairly suggest the electron emission cathode having a <100> face.

Ishii discloses an electron emission cathode made of a single crystal of lanthanum hexaboride (column 3, line 56) having a <100> face.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the electron emission cathode of Ishii for that of Veneklasen and Takigawa because by having a <100> face emission cathode the electron beam intensity is more constant over time (column 1, line 38-39).

Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Veneklasen and Takigawa in view of Hiraoka et al. (US Patent 4,311,941; hereinafter Hiraoka).

Veneklasen and Takigawa shows all the limitations above, including the emission cathode located between two heaters (Takigawa, figure 2A, 54).

However, Veneklasen and Takigawa are silent as to the material the heaters are made from.

Hiraoka discloses heathers for an emission cathode being made of pyrolytic carbon (column 3, line 12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use carbon for the material of the heaters disclosed by Veneklasen and Takigawa because the electron emission cathode heats faster due to the excellent conductive properties of the carbon.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (703) 308-4858. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

emg

  
EDWARD A. GLICK  
SUPERVISORY PATENT EXAMINER